

WHAT IS CLAIMED IS:

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1. An electrophysiology device, comprising:

a) an elongated shaft having a proximal end, a distal end, and a distal shaft section;

b) a plurality of electrodes on an exterior portion of the distal shaft section; and

c) a plurality of temperature sensors on an exterior portion of the distal shaft section, being positioned so that at least one temperature sensor is disposed between two adjacent electrodes.

2. The device of claim 1 further including a plurality of electrode electrical conductors which are each electrically connected to an individual electrode at a distal end of the electrode electrical conductor and having a proximal end configured to connect to an electrical source, and a plurality of temperature sensor electrical conductors which are each electrically connected to an individual temperature sensor at a distal end of the temperature sensor electrical conductor.

3. The device of claim 2 wherein the electrical conductors are helically braided into the shaft.

4. The device of claim 1 further including a conducting member connected to the temperature sensor which transmits heat to the temperature sensor.

5. The device of claim 4 wherein the conducting member is a metal band disposed about the shaft and the temperature sensor thereon.

6. The device of claim 4 further including a jacket disposed about the conducting member.

7. The device of claim 6 wherein the conducting member jacket is in part disposed about a periphery of the two electrodes adjacent to the temperature sensor.

8. The device of claim 1 wherein the electrode is a tubular helical coil disposed about the shaft.

9. The device of claim 2 wherein the shaft has an elongated core member disposed therein.

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The device of claim 2 wherein the shaft has a lumen extending therein configured to slidably receive a guidewire therein.

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The device of claim 9 further including a jacket disposed about the core member.

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The device of claim 11 wherein the electrical conductors are at least in part helically braided into the core member jacket.

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The device of claim 12 including a second array of electrical conductors at least in part helically braided into the shaft.

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The device of claim 9 further including a distal tip member secured to the distal end of the shaft.

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The device of claim 14 wherein the distal tip member includes a coil member disposed about a distal extremity of the core member distal to the shaft.

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The device of claim 1 wherein the electrodes are sensing and ablation electrodes.

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The device of claim 1 wherein the distal shaft section has a maximum outer dimension less than 1.65 mm.

18. An electrophysiology device assembly, comprising:

a) a guiding member having an elongated shaft having a proximal end, a distal end, a port in the proximal end, a port in a distal shaft section, and a lumen extending therein; and

b) an electrophysiology device slidably disposed in the lumen of the guiding member, comprising:

an elongated shaft having a proximal end, a distal end, and a distal shaft section;

a plurality of electrodes on an exterior portion of the distal shaft section; and

a plurality of temperature sensors on an exterior portion of the distal shaft section, being positioned so that at least one temperature sensor is disposed between two adjacent electrodes.

19. The assembly of claim 18 wherein the guiding member distal shaft section is shapeable.

20. A method for treating a patient, comprising:

a) providing an electrophysiology device, comprising:
an elongated shaft having a proximal end, a distal
end, and a distal shaft section;

5 a plurality of electrodes on an exterior portion of the
distal shaft section; and

a plurality of temperature sensors on an exterior
portion of the distal shaft section, being positioned so that
at least one temperature sensor is disposed between two
10 adjacent electrodes;

b) introducing the device into the patient's vasculature
and advancing the device until the distal section of the device is
disposed within a chamber of the patient's heart;

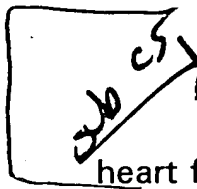
c) placing at least one electrode on the device distal
15 shaft section in contact with a desired surface of the heart
chamber; and

d) delivering high frequency electrical energy to two
adjacent electrodes on the device and measuring the temperature
at a temperature sensor between the two electrodes, to form a

first lesion and a second lesion continuous with the first lesion on the surface of the heart chamber.

21. The method of claim 20 further including before step (a), providing an elongated guiding member having proximal and distal ends, an inner lumen extending therein to the distal end configured to slidably receive the electrophysiology device, and a port on a distal section in communication with the inner lumen, and introducing the guiding member into the patient's vasculature and advancing the distal end of the guiding member to a chamber of the patient's heart.

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22. The method of claim 19 wherein the patient is treated for heart fibrillation or flutter.

23. An electrophysiology device for use within a patient's heart, comprising:

- a) an elongated shaft having proximal and distal ends;
- and
- b) a distal shaft section having a maximum outer dimension of about 1 mm to about 1.3 mm, a plurality of longitudinally disposed electrodes on an exterior portion thereof, at least one temperature sensor disposed on an exterior portion

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of the distal shaft section between two adjacent electrodes, and
a plurality of individually insulated electrical conductors which
are each electrically connected to an individual electrode or an
individual temperature sensor.

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²³ 24. The electrophysiology device of claim ~~23~~²⁴ including an inner
lumen extending within the elongated shaft, configured to slidably
receive a device therein.

²⁴ 25. The electrophysiology device of claim ~~24~~²⁴ including a core
member extending within the elongated shaft.

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²⁵ 26. The electrophysiology device of claim ~~25~~²⁶ wherein the
electrical conductors are disposed about the core member.

²⁶ 27. The electrophysiology device of claim ~~26~~²⁷ wherein the
electrical conductors form at least part of a wall of the distal shaft
section.

²⁷ 28. The electrophysiology device of claim 23 wherein the
electrical conductors are electrically connected to a source of high
frequency electrical energy.

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